

Job Risk Analysis																	
Name(s) of Risk Team Members: P. Cirnigliaro, F. Dusek, K. Wokosky, P.Rosas				Point Value → Parameter ↓		1		2		3		4		5			
Job Title: Electrical Working Hot Job Number or Job Identifier: JRA 6-05				Frequency (B)		≤once/year		≤once/month		≤once/week		≤once/shift		>once/shift			
Job Description: Install test resistor in DC side (125V, ±700A) of Inver power supply in C-18 house.				Severity (C)		First Aid Only		Medical Treatment		Lost Time		Partial Disability		Death or Permanent Disability			
Training and Procedures List (optional):				Likelihood (D)		Extremely Unlikely		Unlikely		Possible		Probable		Multiple			
Approved by: <i>E. Lessard</i> Date: 4-8-05 Rev. #: 1																	
Stressors (if applicable, please list all):				Reason for Revision (if applicable): Added controls for improved electrical safety						Comments: Kirk key system presently being installed.							
				Before Additional Controls									After Additional Controls				
Job Step / Task	Hazard	Control(s)	Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	Control(s) Added to Reduce Risk	Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	% Risk Reduction	
Drive to and from C-18 house	Highway accidents	Procedures, training, permits.	N	3	2	3	2	36									
Working within AGS berm.	Radiation	Procedures, training, permits.	N	3	2	1	1	6									
Perform LOTO on 440 VAC disconnect.	Exposure to electrical shock, arc flash.	Procedures, training, use of PPE as per NFPA 70E, use of lock out device. Second person stands by for emergency response.	N	1	2	5	2	20	Installing Kirk key system on power supply. See Notes 1 through 4		1	2	5	1	10	50	
Verify that power supply is de-energized by inspection of power supply console instrumentation.	Exposure to electrical shock.	Procedures, training; NOTE: a working hot permit is not needed in this verification step since contact with potentially energized conductors is not required. While some verification techniques require a working hot permit, this is not one of them.	N	2	2	1	1	4	See Notes 1 through 4								
Verify that power supply is de-energized by inspection test equipment.	Exposure to electrical shock from capacitors.	Procedures, training, internal shorting mechanism.	N	2	2	3	2	24	See Notes 1 through 4		2	2	3	1	12	50%	

Open DC side of cabinet	Exposure to electrical shock.	Procedures, training.	N	2	2	3	2	24	See Notes 1 through 4		2	2	3	1	12	50%
Verify that power supply is de-energized by visual inspection of LEDs in DC cabinet.	Exposure to electrical shock.	Procedures, safety glasses, training	N	2	2	3	2	24	See Notes 1 through 4		2	2	3	1	12	50%
Install test resistor (Use of hand tools, screwdriver)	Being struck by an object such as a sharp surface on a tool	Procedures, safety glasses, training	N	1	2	1	2	4								
Verify operation of test resistor.	Exposure to electrical shock.	Procedures, training	N	2	2	3	2	24	See Notes 1 through 4		2	2	3	1	12	50%
Further Description of Controls Added to Reduce Risk:																
NOTE 1: OSHA Teams visited C-AD during the period October 20 through October 31, 2003 and recorded electrical non-compliances. All OSHA findings will be closed by 2006 by full compliance or with an equivalent level of safety.. The status of the OSHA items are maintained in BNL’s Compliance suite, and closed on a schedule commensurate with funding.																
NOTE 2: A compliance plan to have all electrical installations accepted by an Authority Having Jurisdiction (AHJ), as per 29CFR1910 Subpart S, has been implemented by BNL. UL, CSA, LLC or other NRTL accepted equipment will be acquired at BNL for all future installations. Prior installations shall be reviewed and accepted by qualified AHJs. The plan must be completed by 2009.																
NOTE 3: Full compliance with NFPA 70E was adopted by the C-AD in December 2005. NFPA 70E prescribes protective clothing to protect against shock and arc blast; thus reducing the severity and likelihood of an injury. It also prescribes training, which is currently fulfilled by taking the 2005 version of Electrical Safety 1 and by attending the C-AD 3-hour classroom course on electrical safety rules and PPE.																
NOTE 4: Contractor and vendor training in work planning and electrical safety has been improved. Plans to reach all contractors and vendors with regard to NFPA 70E requirements prior to performing work at BNL have been implemented. C-AD has obtained lists of all its vendors and suppliers and is ensuring that they take Electrical Safety 1 or have equivalent training if needed.																
*Risk:	0 to 20		21 to 40			41-60			61 to 80			81 or greater				
	Negligible		Acceptable			Moderate			Substantial			Intolerable				